

## A new species of *Neoheterospilus* (Hymenoptera: Braconidae: Doryctinae) from Chamela, Jalisco, Mexico

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**Abstract.**—A new species of *Neoheterospilus*, *N. chamelae* n. sp., is described from the Chamela-Cuixmala biosphere reserve in the Pacific coast of Jalisco, Mexico. This new species is placed within the subgenus *Harpoheterospilus* as it has an almost indistinct suture between the second and third metasomal terga and by the absence of a delineated apical area on the second metasomal tergite. *Neoheterospilus chamelae* is distinguished from the other species of the subgenus, *N. (H.) falcatus*, by its smooth vertex, single transverse carina in the prescutellar sulcus, a longer basal carina on the propodeum, and an elongate first metasomal tergite.

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**Resumen.**—Se describe una nueva especie de *Neoheterospilus*, *N. chamelae* n. sp., de la reserva de la biósfera Chamela-Cuixmala en la costa del Pacífico en Jalisco, México. Esta nueva especie es incluida dentro del subgénero *Harpoheterospilus* por tener una sutura casi indistinguible entre el segundo y tercer tergos metasomales, y por la ausencia de un área apical delineada en el segundo tergo metasomal. *Neoheterospilus chamelae* se distingue de la otra especie del subgénero, *N. (H.) falcatus*, por presentar un *vertex* liso, una sola carina transversal en el surco prescutelar, y la carina basal en el propodeo y el primer tergo metasomal más largos.

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The doryctine genus *Neoheterospilus* was erected by Belokobylskij (2006) to contain ten species, three of which were previously described and assigned to the megadiverse, polyphagous genus *Heterospilus* Haliday. *Neoheterospilus* was distinguished from the latter genus on the basis of a highly modified, unusually shaped ovipositor, and on the frequent presence of a basal area on the second metasomal tergite. This author also placed the genus in the tribe Heterospilini and divided it into two subgenera: *Neoheterospilus*, represented by nine species from the South Palaearctic and Old World tropics, and *Harpoheterospilus*, which included only one species, *N. falcatus* (Marsh), originally described from Venezuela and Brazil (Quicke and Marsh 1992).

Recent collecting trips carried out as part of an ongoing barcoding study of the doryctine fauna from the Chamela-Cuixmala Biosphere Reserve, in Jalisco, Mexico, have revealed the existence of an undescribed species of *Neoheterospilus*. Here we describe this new species, which represents the first record of the genus in Mexico and Mesoamerica. Preliminary molecular evidence has shown that *Neoheterospilus* may represent a derived lineage within *Heterospilus* (Zaldívar-Riverón et al., in prep.). However, we maintain the current status of this taxon until more evidence is gathered.

### MATERIALS AND METHODS

Specimens assigned to *Neoheterospilus* were collected during three field trips to

the Chamela-Cuixmala Biosphere reserve carried out during June, September and November 2009, and February 2010. Four different collecting techniques were employed during these trips, though all specimens of the new species were collected either with light traps or sweep nets. All specimens were preserved in 100% ethanol and subsequently taken to the laboratory to obtain DNA sequence data for a barcoding study using a non-destructive DNA extraction technique. All specimens were air dried and mounted. Specimens are deposited in the Colección Nacional de Insectos (CNIN), Instituto de Biología, Universidad Nacional Autónoma de México, and in the Museo Argentino de Ciencias Naturales "Bernardino Rivadavia", Buenos Aires, Argentina (MACN).

Association of males with the newly described species was confirmed by generating barcoding sequences for all specimens of both sexes. Sequence data for the specimens included in this study will be published elsewhere. Our description mostly follows Belokobyl'sij's (2006) format in order to facilitate comparison of the new species with the described species of the genus. The terminology employed follows Sharkey and Wharton (1997), but Belokobyl'skij and Maeto's (2009) wing venation nomenclature is also included in parentheses. Photographs were taken and edited using a Leica® Z16 APO-A stereoscopic microscope, a Leica® DFC295/DFC290 HD camera, and the Leica Application Suite® program. All photographs were uploaded to the Morphbank web site ([www.morphbank.org](http://www.morphbank.org)).

## TAXONOMY

### *Neoheterospilus* (*Harpoheterospilus*)

#### *chamelae* n. sp.

(Figs 1A–F, 2A–D)

*Type material*.—**Holotype**: ♀, Mexico, Jalisco, Chamela Biostation, UNAM, near lab, 19.49814 N-105.0444 W, 95 m, 23–24 June 2009, light trap,

tropical dry forest, Clebsch, Zaldívar-Riverón, Polaszek coll. **Paratypes**: 9♀, same data as holotype; 2♀ and 1♂, Mexico, Jalisco, Chamela Biostation, UNAM, camino Chachalaca, 19.49934 N-105.03833 W, 56 m, 25–27 June 2009, light trap, sweep net, tropical dry forest, Clebsch, Zaldívar-Riverón, Polaszek coll.; 1♂, Mexico, Jalisco, Chamela Biostation, UNAM, camino Chachalaca, 19.49785 N-105.04456 W, 120 m, 6 September 2009, sweep net, tropical dry forest, Clebsch, Zaldívar-Riverón coll.; 1♂, Mexico, Jalisco, Chamela Biostation, UNAM, camino Chachalaca, 19.49934 N-105. 105.03833 W, 56 m, 18 September 2009, sweep net, tropical dry forest, Zaldívar-Riverón coll.; 1♂, same data as holotype except date (24–25 June 2009); 1♂, Mexico, Jalisco, Chamela Biostation, UNAM, near lab, 19.49858-105.04417, 92 m, 19–20 November 2009, light trap, tropical dry forest, Zaldívar-Riverón coll.; 1♂, Mexico, Jalisco, Fundación Chamela-Cuixmala, Poza Jaguar, 19.42927 N-104.97968 W, 66 m, 5 September 2009, sweep net, tropical dry forest, H. Clebsch, A. Zaldívar-Riverón coll.; 3♀, Jalisco, Chamela Biostation, UNAM, camino Calandria (mirador), 19.50485 N-105.03786, 45 m, 24 February 2010, sweep net, tropical dry forest A. Zaldívar-Riverón, J. J. Martínez; 1♀, Jalisco, Chamela Biostation, UNAM, camino Chachalaca, 19.4997 N-105.03851 W, 51 m, 25 February 2010, light trap, tropical dry forest A. Zaldívar-Riverón, J. J. Martínez; 2♀, 1♂, Jalisco, Chamela Biostation, UNAM, near lab, 19.4986 N-105.04411 W, 20 February 2010, light trap, tropical dry forest A. Zaldívar-Riverón, J. J. Martínez; 1♀, 1♂, Jalisco, Chamela Biostation, UNAM, camino Buho, 19.49913 N-105.04217 W, 25 February 2010, Sweeping net, tropical dry forest A. Zaldívar-Riverón, J. J. Martínez.

*Description*.—*Female*: Body length 2.6–3.5 mm (Fig. 1A); fore wing length 2.0–2.4 mm.

**Head**: 1.6–2.0 times wider than median length. Occipital carina complete and joining hypostomal carina before mandible. Head behind eyes (dorsal view) roundly narrowed. Transverse diameter of eye 2.4–2.6 longer than temple (dorsal view). POL 0.7–1.0 times Od, 0.5–0.7 times OOL. Eye 1.2–1.3 times as high as broad. Malar space 0.2–0.3 times eye height, 0.6–0.8 times basal width of mandible. Face

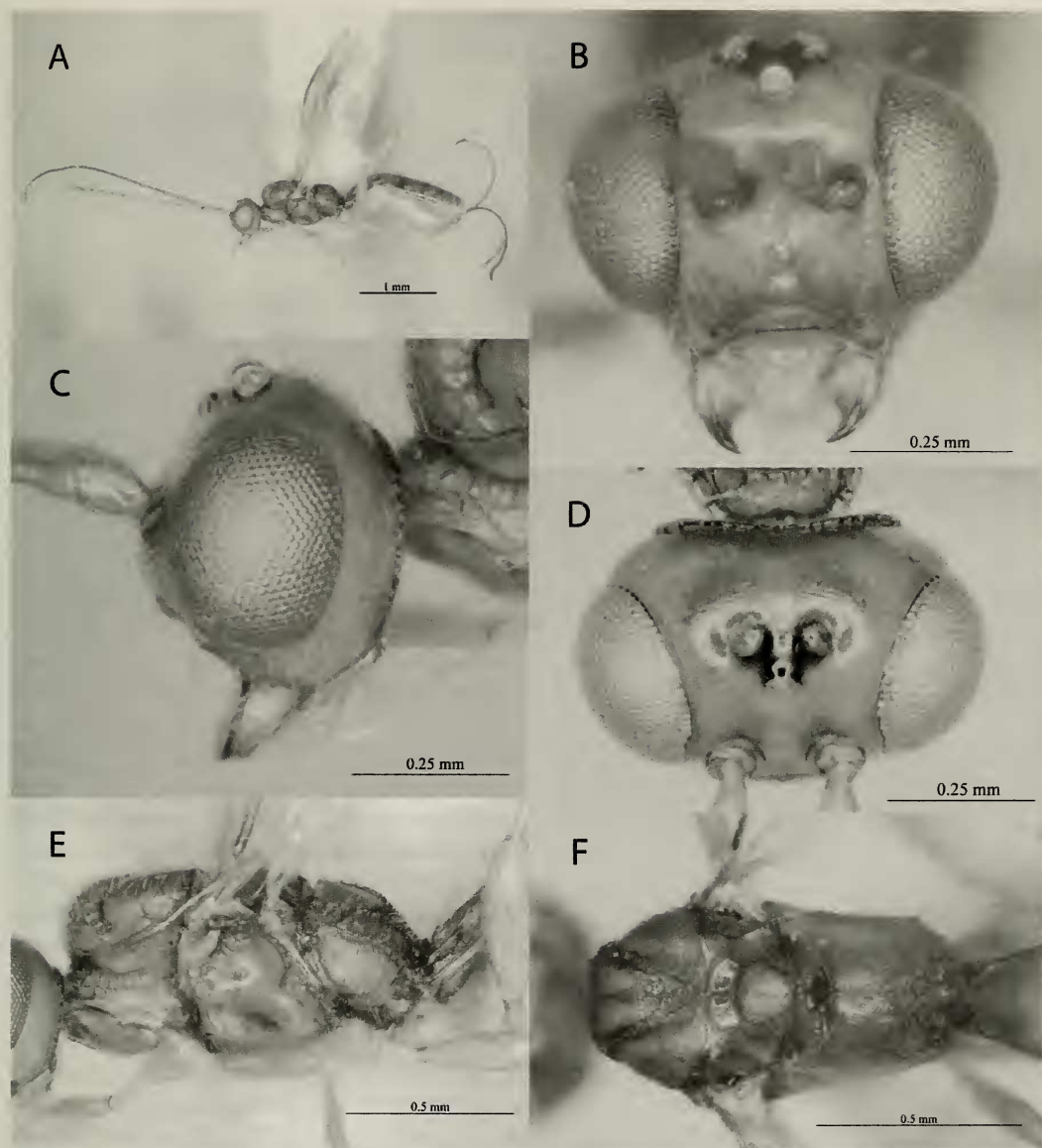


Fig. 1. *Neoheterospilus chamelae* n. sp.: A, habitus of female, lateral view; B, head, anterior view; C, head, lateral view; D, head, dorsal view; E, mesosoma, lateral view; F, mesosoma, dorsal view.

width 1.5–1.6 time eye height of face and clypeus combined. Width of hypoclypeal depression 1.6–1.8 times distance from edge of depression to eye, 0.3–0.4 times width of face. Antenna filiform, 24–25 antennomeres. Scapus 1.3–1.4 times as long as maximum width. First flagellomere 4.0–4.5 times longer than wide, 1.1–1.2 longer than second segment. Penultimate flagel-

lomere 0.4–0.5 times as long as wide, 0.6 times as long as first segment, as long as apical flagellomere.

**Mesosoma (Figs 1E, F):** 1.7–1.8 times longer than high, and 1.8–1.9 times longer than wide. Mesoscutum 0.7–0.8 times as long as wide. Median lobe of mesoscutum weakly convex anteriorly. Prescutellar depression with a single median carina, finely



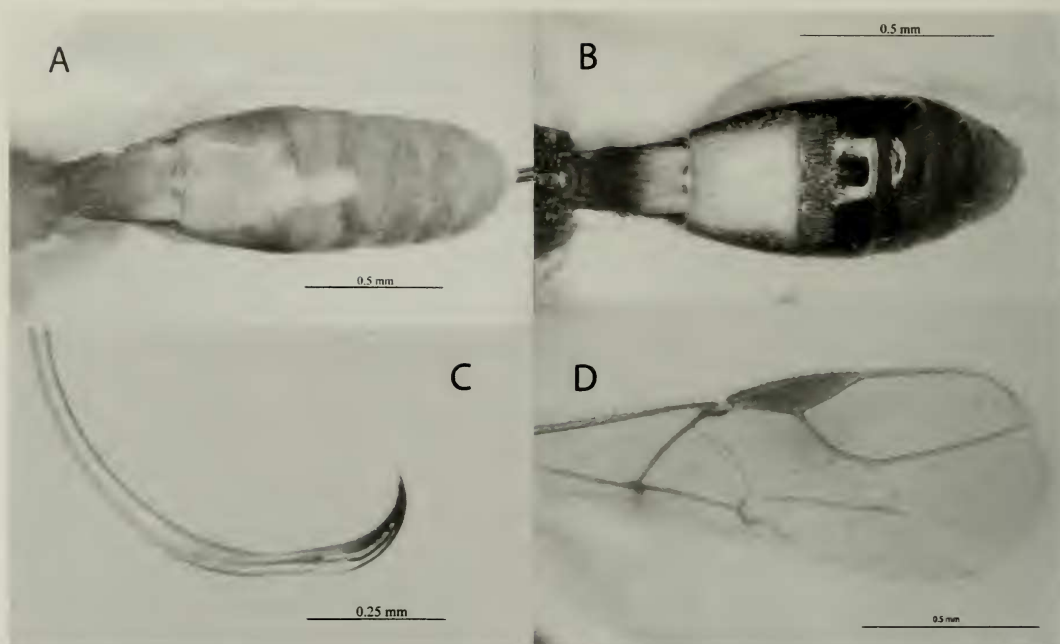


Fig. 2. *Neoheterospilus chamelae* n. sp.: A, metasoma of female, dorsal view; B, metasoma of male; C, apex of ovipositor; D, fore wing of female.

rugulose, 0.4–0.5 times as long as scutellum. Sternauli wide and scrobiculate.

**Wings:** fore wing 3.0–3.3 times longer than wide (Fig. 2D). Pterostigma 0.7–0.8 times as long as R (metacarpus). Vein r (first radial abscissa) 1.3–1.7 times as long as 3RSa (second radial abscissa), 0.3 times as long as 3RSb (third radial abscissa), and 0.5–0.6 times as long as trace of 2RS (first radiomedial vein). Vein (RS+M)a (first abscissa of medial vein) slightly curved. Discal (discoidal) cell 1.4–1.7 times longer than wide. Hind wing 5.0–5.2 times longer than wide. Vein SC+R (second abscissa of costal vein) absent. Vein M+CU (first abscissa of mediocubital vein) 0.7–0.8 times as long as 1M (second abscissa). Vein m-cu (recurrent vein) unsclerotised.

**Legs:** Hind coxa with distinct basoventral corner and without basoventral tooth. Hind femur 3.3–3.5 times longer than wide. Hind tibia 8.0–8.5 times longer than wide and 1.0–1.2 times longer than hind tarsus. Second segment of hind tarsus 0.6–0.7 times as long as basitarsus, 1.4–1.5

times as long as fifth segment (without pretarsus).

**Metasoma:** 1.1–1.2 times as long as head and mesosoma combined (Fig. 2A). First tergite slightly widened towards apex, 1.7–2.1 times longer than apical width; its basal sternal plate (acrosternite) 0.3 times as long as first tergite. Basal area of second tergite absent. Median length of second tergite 0.7–0.9 times its basal width, 1.1–1.3 times length of third tergite. Second suture shallow, almost indistinct. Ovipositor sheath 0.8–1.0 times as long as metasoma. Ovipositor thick, its apex sickle shaped (Fig. 2C). Ovipositor sheath distinctly and irregularly widened apically.

**Sculpture and pubescence:** Vertex smooth, occasionally with faint and poorly defined transversal striate sculpture (Fig. 1D); frons smooth (Figs 1B, D); face weakly acinose-coriaceous, turning smooth and slightly swollen medially (Fig. 1B); temple smooth (Fig. 1C). Pronotum coriaceous (Fig. 1E), pronotal furrow distinctly scrobiculate, mesoscutum strongly coriaceous, with rugose medioposterior area;

notauli complete and scrobiculate; scutellum coriaceous; prescutular depression smooth to finely coriaceous, with a single median carina (Fig. 1F). Mesopleuron smooth medially, turning coriaceous posteriorly; subalar groove scrobiculate; sternaulus deep and scrobiculate (Fig. 1E). Metapleuron coriaceous, with two subvertical carinae posteriorly. Basolateral areas of propodeum coriaceous; remaining areas of propodeum strongly rugose-reticulate; areola delineated by carinae, with long median carina, 0.7–0.8 times as long as median length of scutellum (Fig. 1F). Hind coxa entirely coriaceous. Hind femur slightly coriaceous, turning smooth ventrally. First metasomal tergite longitudinally striate, with two more distinct anterior longitudinal carinae along anterior half of tergite; second tergite longitudinally striate, occasionally with weak granular sculpture between striae; remaining terga smooth (Fig. 2A). Head except eyes, mesoscutum, and pronotum covered by short, erect setae. Mesopleuron glabrous medially. Propodeum and metapleuron sparsely setose. Hind tibia with short semi-erect setae, more dense ventrally. Metasoma with first and second terga with sparsely and uniformly distributed short setae, remaining terga mostly glabrous, only with a transverse row of sparse setae subapically. Ovipositor sheath uniformly covered by long, erected setae.

**Colour:** Head, mesosoma and metasoma honey yellow (Fig. 1A); antennae honey yellow basally, gradually turning brown to the tip; ventral side of head, mouth parts, legs and ventral surface of metasoma pale yellow. Ovipositor sheath dark brown. Wings hyaline, veins light brown, pterostigma brown (Fig. 2D).

**Male.**—Body length 1.7–2.3 mm. Fore wing length 1.4–1.9 mm. Hind wing with brown to honey yellow sclerotised enlargement, length almost equal to distance from base of hind wing to base of enlargement. Similar to female except darker metasomal terga, with second and apical part of first

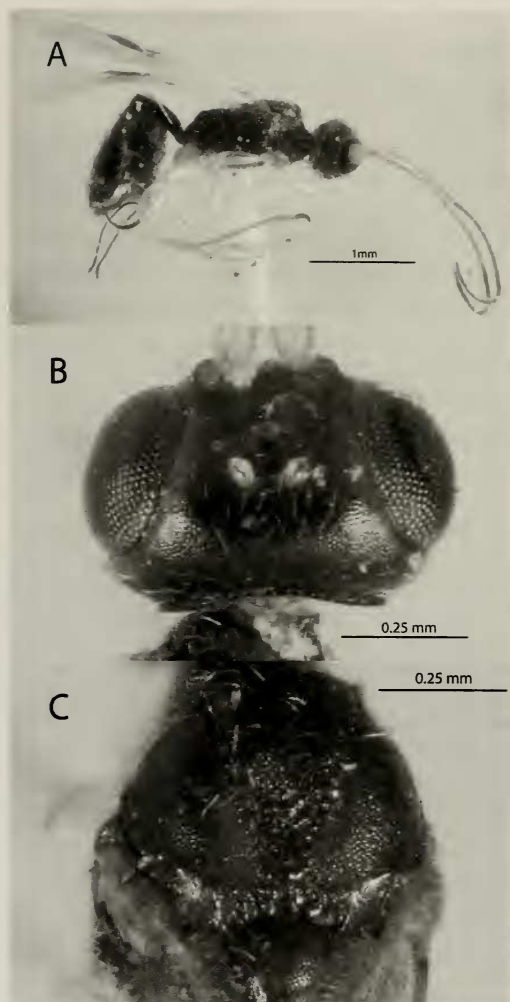


Fig. 3. *Neoheterospilus falcatus* (Marsh): A, habitus of female, lateral view; B, head, dorsal view; C, mesoscutum and anterior part of scutellum, dorsal view.

tergites pale yellow. Second tergite entirely and third in basal half striate. Antenna with 17–22 antennomeres. First metasomal tergite 1.5–1.7 times longer than apical width.

**Remarks.**—This species is similar to *N. (H.) falcatus*; however, it differs by having the body honey yellow (brown in *N. falcatus*; Fig. 3A), vertex usually smooth (coriaceous in *N. falcatus*; Fig. 3B), a single transverse carina in the prescutellar sulcus (three to five in *N. falcatus*; Fig. 3C), a longer basal carina on the propodeum (less than 0.7 times as long as median length of

scutellum in *N. falcatus*), and by an elongate first metasomal tergite (1.7–2.0 times longer than wide; 1.3–1.5 times in *N. falcatus*).

*Neoheterospilus chamelae* is included in the subgenus *Harpoheterospilus* by the almost indistinct suture between the second and third metasomal terga and the absence of a delineated apical area on second metasomal tergite. However, it differs from the original concept of the subgenus by having a single median carina in the prescutellar depression, and by usually having a smooth vertex.

### ACKNOWLEDGMENTS

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